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ABSTRACT

Past research has shown that the way one walks reflects one's personality traits and mood states. A study was conducted to examine whether the way one walks can reciprocally affect one's mood. The study tested the hypothesis that walking vigorously would cause a person to feel happier, and that a shuffling walk would cause a person to feel more depressed. Under the pretext of a study of the effect of physical activity on heart rate, college student subjects (N=79) were instructed to walk for 3 minutes either naturally taking long strides, swinging their arms, and holding their head up or taking short strides, shuffling their feet, and watching their feet. Before walking, subjects completed a short mood questionnaire excerpted from the Profile of Mood Status (POMS). Following their walk, subjects completed a longer POMS questionnaire. Subjects also solved anagrams, rated their own performance, and completed Rotter's Locus of Control Scale. The results revealed that long-striders rated significantly higher on vigor and lower on depression and fatigue than did other groups while short-striders rated lowest on vigor and highest on depression and fatigue. Results from a second-study involving 68 subjects support the hypothesis that the way one walks affects one's mood, although it had no effect on task performance as measured by anagram problem solving. (Author/NB)

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THE EFFECTS OF WALKING BEHAVIOR ON MOOD

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The Effects of Walking Behavior on Mood

Abstract

Past research has shown that the way one walks reflects one's personality traits and mood states. Can the way one walks reciprocally affect one's mood? This study tested the hypothesis that walking vigorously will cause one to feel happier, and that a shuffling walk will cause one to feel more depressed. Under the pretext of a study of the effect of physical activity on heartrate, subjects were directed to walk either (1) naturally, (2) taking long strides, swinging their arms, and holding their head up, or (3) taking short strides, shuffling their feet, and watching their feet. Results of a shortened version of the POMS mood questionnaire showed that the long-striders rated significantly highest on "vigor" and lowest on "depression" and "fatigue", while the short-striders rated lowest on "vigor" and highest on "depression" and "fatigue."

The Effects of Walking Behavior on Mood

Recent research has suggested that one's mood state and personality traits are reflected in the way one walks (Snodgrass, Furman, Lederman, & Acosta, 1985). Can the way one walks reciprocally affect one's mood? Can people raise their spirits by walking vigorously? Or will slumping and shuffling along actually lead the walker to feel down? Other research has suggested that one's mood can be affected by one's facial expression (e.g., Laird, 1974; Vaughn & Lanzetta, 1981) and by one's posture (e.g., Riskind, 1984; Riskind & Gotay, 1982). Laird (1974) manipulated subjects' faces to reflect a smile or a frown without specifying just what the expressions were, and it was found that subjects rated their emotions as more elated and less aggressive when in the "smiling" pose. Vaughn & Lanzetta (1981) asked subjects to "inhibit" or to "amplify" their facial expressions of the emotions being portrayed by a videotaped model. They found that those subjects who "amplified" their facial expressions showed more physiological arousal to the model's emotions than did those asked to "inhibit" facial expressiveness. Riskind & Gotay (1982) asked subjects to sit in a a "slumped" posture or an "upright" posture while doing a learned helplessness task. Results showed that subjects in the slumped posture developed learned helplessness more readily and reported more stress than did those in an upright posture. The results of these studies are explained in terms of self-perception theory. Since our past research (Snodgrass, Furman, Lederman, & Acosta, 1985) has shown that a long-stride and arm swing are interpreted as indicators of a happy mood, and that a short-stride and shuffling feet are indicators of a melancholy mood, we thought that, reciprocally, performing these gaits might lead one to experience these moods. We hypothesized that subjects instructed to walk using long-strides, arm swings, and eyes looking forward would report happier moods and persist longer at a difficult task than those instructed to walk with short strides, shuffling feet, and eyes downward.

Study I

Method. Seventy-nine student volunteer subjects, 35 males and 44 females, were told the cover story that we were interested in the effects of emotions and physical activity on physiological responses (specifically, heart rate). Individually, the subjects were first shown a five-minute film clip (either a funny, sad, or neutral clip). After the film, the subject's pulse was taken and they were asked to fill out a short mood questionniare (excerpted from the Profile of Mood States (POMS, McNair, Lorr, & Droppleman, 1971).

The subjects were then directed to another room in which they were told to walk for three minutes. They were either told to walk (1)naturally; (2)taking long strides, swinging the arms, and looking straight ahead (brisk

walk); or (3)taking short strides, shuffling their feet, and looking at their feet (shuffling walk). (Type of film, type of walk, and sex were crossed). The experimenter directing the walk was blind as to the type of film the subject had seen. After the 3-minute walk, the subject's pulse was taken again, and they completed another, longer mood questionnaire (again, excerpted from the POMS).

In the final part of the study, the subjects were given 5 minutes to solve 15 relatively easy anagrams. Then they completed a questionnaire in which they rated their performance on the anagrams and predicted how many of another set they would get correct. Their pulse was taken again, then they were given "unlimited" time to solve another set of 15 anagrams. These were extremely difficult, and the experimenter timed how long they persisted in their attempt to solve the anagrams (subjects were stopped after ten minutes). Finally, the subjects completed Rotter's Locus of Control Scale, were debriefed, and left the laboratory. The experimenter who administered the anagrams and Locus of Control Scale did not know what film the subject had seen nor what walk he or she had done. Debriefing indicated that the cover story was accepted by the subjects.

Results. Three-way ANOVAs (3x2x3 - film x sex x walk, within group df=60) were done on each subscale of the post-walk mood questionnaire (tension, anger, depression, vigor, confusion, and fatigue), persistence on the difficult anagram task, accuracy on both anagram tasks, subject's prediction of performance on the second set of anagrams, and the score on the Locus of Control Scale. The only significant effects were the effect of walk on the mood subscales "depression", "vigor", and "fatigue." There were no other significant main effects and no significant interactions. Therefore, one-way ANOVAs (within group df=76) were performed to facilitate tests for simple effects.

Results showed that the mean scores on the POMS subscale for vigor were lowest for shuffling walkers and highest for brisk walkers ($F(2,76)=6.34$, $p=.003$); mean scores on the subscale for depression were lowest for brisk walkers and highest for shuffling walkers ($F(2,76)=4.52$, $p=.01$); and mean scores on the subscale for fatigue were lowest for brisk walkers and highest for shuffling walkers ($F(2,60)=4.05$, $p=.02$). The means are shown in Table 1. Duncan's Multiple-Range Test for differences between means indicated that, for all three moods, the shuffling walkers differed significantly from both the natural walkers and the brisk walkers, but the brisk walkers and natural walkers did not differ significantly from each other. Thus, our hypothesis concerning the effect of walk on mood was supported, but the comparison with the control group indicates that it is the shuffling walk that most effects our moods. When we shuffle along, we become more tired and less happy than when we either walk naturally or briskly.

However, our hypothesis concerning the effect of walk on task persistence was not supported ($F(2,60)=1.06$, $p=.35$). There was a significant effect of film on mood reported immediately after the film and before the walk ($F(2,76)=3.04$, $p=.05$), which showed that the films did effect the subjects' moods appropriately (mean ratings on depression: funny=.89, neutral=.97, sad=1.27). However, there was no apparent carry-over of the mood established by the film after the walk.

Discussion. The results presented strong support for the hypothesis that the way we walk can affect our mood. Those who walked taking short strides, shuffling their feet and looking down reported feeling more depressed and tired, and less lively, than those who walked naturally or vigorously. This suggests that when we feel down, we can brighten our mood by purposefully walking with vigor.

Just how our walk affects our mood is not answered by this study. It may be explained by self-perception; that is, we see ourselves walking as if we felt down, and we decide we must, therefore, feel down. Or it may be explained physiologically; that is, a vigorous walk increases the heartrate and respiration and, therefore, invigorates us. The pulse rate taken immediately after the walk did not reflect any significant difference, but there was a slight tendency for the brisk and natural walkers to have a slightly higher rate than the shuffling walkers (means: brisk=15.23, natural=15.50, shuffling=14.08; $F(2,60)=1.20$, $p=.31$).

We thought that our failure to find support for our hypothesis concerning persistence on a difficult task might be due to the delay between the walk and the difficult task. The subjects had completed a mood questionnaire, had moved to a different room, had solved relatively easy anagrams, and had completed a questionnaire about their performance on the easy anagrams before they were given the second anagram task. Riskind (1984) and Riskind & Gotay (1982) gave success or failure feedback on a cognitive task while the subjects were seated in their slumped or upright posture and administered the difficult task immediately after the subjects finished the posture manipulation. We hypothesized that we might find more of an effect of walking on task performance and persistence if the tasks were given while the subjects walked and immediately after. Therefore, we designed the second study to replicate the effect of walk on mood (including an additional control condition of sitting) and to further test the effect of walk on task performance and persistence.

Study II

Since there was no effect of the film, we did not use the film in this study. The hypotheses tested in this study were: (1)Subjects who walk with long strides, arm swings, and looking ahead will report feeling happier and

less tired than those who walk with short strides, shuffling feet, and looking down; and (2)Subjects who walk with long strides, arm swings, and looking ahead will perform better, persist longer, and have more confidence in their performance on cognitive tasks than those who walk with short strides, shuffling feet, and looking down.

Method. Sixty-eight subjects were randomly assigned to one of four groups: long-stride, short-stride, natural walk, and sitting (control). Subjects were told that this was a study of the effects of physical activity on cognitive performance. The subjects were run individually. The subjects were given a list of words to learn before beginning their walk and were asked to recall as many as possible while walking. Their persistence and accuracy were recorded. They then did a counting-backwards task while continuing to walk, and, again, persistence and accuracy were recorded. (After each task all subjects were told that they performed better than 80% of the other subjects to prevent discouragement over their performance).

Subjects were then seated and were given the mood questionnaire used in Study I. They were then given a set of 10 anagrams, consisting of 6 relatively easy ones and 4 very difficult ones, to solve. Their persistence and accuracy were recorded. Finally, they completed a questionnaire containing items rating the difficulty of the tasks they did, how well they performed on the tasks, whether their performance was due to luck or skill, and how well they would do on similar tasks in the future. They were then debriefed.

Results. One-way ANOVAs were run on the subscales of the mood questionnaire, the time spent on each task, the accuracy scores of each task, and the items on the post questionnaire. The treatment effected the ratings on depression and fatigue in the hypothesized direction, although not to the accepted level of significance. For depression, $F(3,64)=2.59$, $p=.06$, and for fatigue, $F(3,64)=2.62$, $p=.06$. The effect of the walk on vigor was quite weak, although the means reflect the expected trend ($F(3,64)=1.52$, $p=.22$). T-tests comparing the brisk walk to the shuffling walk only produced significant differences for vigor ($t(32)=2.14$, $p=.04$) and fatigue ($t(32)=2.12$, $p=.04$). Means are presented in Table 2. The four groups each had an N of 17 in this study, while in Study I, the groups averaged 26 subjects, which may account for the lack of significance in the Anovas of Study II. The results of Study II, however, offer strong support for the results of Study I.

There were no main effects nor interactions that approached significance on any of the other dependent variables. Apparently, although the way one walks affects one's mood, it has no effect on one's performance in the tasks used in these studies.

Conclusion

These studies further the research on the effects of facial expressions and posture on emotions by examining how our gait can also affect our mood and our cognitive performance and persistence. We have found that the way we walk can cause us to feel more or less happy, lively, and tired. These studies invite further research on walking behavior and the effects of gait on emotion and motivation. A logical study to follow these might examine the effect of a method of physiological stimulation other than vigorous walking that would have similar physiological arousal, to determine whether these results are best explained by the self-perception of a stereotypically "happy" gait, or by the physiological stimulation of vigorous activity. Also, it would be interesting to break down the gaits used here into micro-components (i.e., separating the long-stride from the arm swing and the head-up; separating the short-stride from the foot shuffle and the head-down), and to see to what extent each component contributes to the effect on emotion.

These studies contribute to the growing literature on the feedback function of physiological processes, the self-perception effects of nonverbal behavior, and suggest that purposefully walking with certain gaits can alter our emotions and motivations.

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Table 1

Mean Ratings by Type of Walk for Study I

Mood	Type of Walk		
	Brisk Walk	Natural Walk	Shuffling Walk
Depression	-.072	.036	.310
Vigor	2.061	1.921	1.384
Fatigue	.692	.571	1.14

Table 2

Mean Ratings by Type of Walk for Study II

Mood	Type of Walk			
	Brisk Walk	Natural Walk	Sitting	Shuffling Walk
Depression	-.066	-.169	-.059	.118
Vigor	2.082	1.871	1.859	1.518
Fatigue	.412	.529	.500	1.088